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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,485	09/15/2003	Kenichi Kawauchi	046601-5109	9250
9629	7590	07/14/2005	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			HUFFMAN, JULIAN D	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/661,485

Applicant(s)

KAWAUCHI ET AL

Examiner

Julian D. Huffman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12, 15, 17 and 18 is/are rejected.
- 7) ☒ Claim(s) 10, 11, 13, 14 and 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/15/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claims 1-18 are objected to because of the following informalities:

Claims 1-18 contain numerous grammatical errors.

For example, In claim 1, at least the following corrections are respectfully suggested:

lines 1 and 13, change "droplets" to "droplet";

line 6, insert "arranged" or the like before the phrase "in the first direction";

line 9, insert "arranged" or the like before the phrase "in the second direction";

line 10, change "a" to "an", etc.

Additionally, in claim 17, the limitations "the first error provided by the recording head units", "the second error provided by the recording head arrays" and "the third error provided by the recording heads" lack antecedent basis.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-9, 12 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Lidke et al. (U.S. 5,805,183).

Lidke et al. discloses:

With regards to claims 1, 5, 8 and 12, an apparatus for correcting ink droplets placement errors for a recording apparatus (figs. 1), the recording apparatus recording images on a recording medium which is conveyed to a first direction by discharging ink droplets from a recording head part to the recording medium, the recording head part having a plurality of recording heads in the first direction, the recording head having a plurality of recording head arrays, the recording head arrays having a plurality of recording head units in a second direction perpendicular to the first direction, the recording head units which are disposed in a staggered arrangement the recording head units having a ink discharging surface (the recording apparatus does not further limit the claims, which are directed towards the apparatus for correcting ink droplets placement errors for a recording apparatus), the apparatus for correcting ink droplets placement errors comprising:

an identifying unit for identifying ink droplets placement errors by the recording head units and the recording head arrays and recording heads in the first direction (software, column 17, line 65-column 18, line 15); and

a controlling unit for controlling timing to discharge ink droplets by the recording head units to reduce ink droplets placement errors in the first direction based on the errors in the first direction (column 18, lines 16-30) and based on a first ink droplets placement error provided by the recording head units, a second ink droplets placement

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error provided by the recording head arrays and a third ink droplets placement error provided by the recording heads (the claim language specifies that the errors are based on first, second and third errors, the origin and number of the errors do not further limit the structure of the controller, which performs the correction operation regardless of the nature of the errors, further, the disclosure mentions various errors of recording heads which affect alignment, column 4, lines 59-67, additionally, each sub-pattern which makes up the printed test pattern is equivalent to an error detected by the device).

With regards to claims 2, 6 and 9, the apparatus according to claims 1, 5 or 8, further comprising:

a reading unit (column 17, lines 64-67) for reading images on a recording medium, the images being printed by the recording head part (column 18, lines 7-9); and

a detecting unit for detecting the ink droplets placement errors in the first direction by each of the recording head units based on the reading images provided by the reading unit, wherein the controlling unit controls the timing based on the errors provided by the detecting unit (column 18, lines 16-30).

With regards to claims 3 and 7, the apparatus according to claims 2 or 6, wherein the recording head units which are disposed in a staggered arrangement (does not further limit apparatus for correcting ink droplets placement errors), the detecting unit further detects ink droplets placement errors of the recording head arrays, the

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controlling unit further controls timing to discharge ink droplets from the recording head units, based on the errors provided by the detecting unit (column 18, lines 16-30).

With regards to claim 4, the apparatus according to claim 3, wherein the detecting unit further detects ink droplets placement errors of the recording heads in the first direction, the controlling unit further controls timing to discharge ink droplets from the recording head units each of the recording heads to reduce the errors, based on the errors provided by the detecting unit (column 18, lines 16-30).

With regards to claim 18, a correcting method for correcting ink droplets placement errors comprising the steps of:

detecting for at least one ink droplets placement errors (column 18, lines 16-30), the errors comprising a first error due to an arrangement of each recording head units, a second error due to an arrangement of each recording head arrays, a third error due to an arrangement of each recording heads (fig. 13, the test pattern printed includes sub-patterns, each one of which represents an error of any one of the head unit, head arrays or recording heads); and

controlling timing to discharge the droplets from the recording head units to reduce the errors based on at least the detected errors (column 18, lines 16-30).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lidke et al. in view of Ishinaga et al. (U.S. 6,243,109 B1).

Lidke et al. discloses everything claimed with the exception of a first controlling unit for controlling the recording head units to discharge ink droplets from the surface of the recording head units; and

a second controlling unit for controlling the timing to discharge ink droplets from the surface of the recording head units by controlling the first controlling unit, the controlling units being provided with the each recording head arrays.

Ishinaga et al. discloses a first controlling unit (fig. 1, element 4) for controlling recording head units to discharge ink droplets from the surface of recording head units (column 4, lines 29-34); and

a second controlling unit (10) for controlling the timing to discharge ink droplets from the surface of the recording head units by controlling the first controlling unit (column 4, lines 29-34), the controlling units being provided with the each recording head arrays (fig. 1, controlling units are on substrate with recording head).

It would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate the first and second control units of Ishinaga et al. into the invention of Lidke et al. for the purpose of reducing the scale and cost of the entire apparatus while reducing processing time (column 2, lines 35-40).

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lidke et al. in view of Ishikawa (JP 6-31923).

With regards to claim 17, Lidke discloses a recording apparatus for recording images on a recording medium which is conveyed to a first direction by discharging ink droplets comprising:

a recording head part (carriage 88) having a plurality of recording heads (fig. 3, elements 84, 86) in a first direction, a plurality of recording head arrays (element 94) having a plurality of recording head units (element 98) in a second direction perpendicular to the first direction, the recording head arrays being held by the recording head, the recording head units having an ink discharging surface (column 8, lines 50-58), an identifying unit for identifying a first and second and third errors (fig. 13, device prints a test pattern, each sub-pattern forming the test pattern represents an error which is identified by an identifying unit, column 18, lines 16-30), which of them corresponding to the recording head units and head arrays and heads in the first direction (the error is an error in alignment in the paper feed direction); and

a controlling unit (software, column 18, lines 16-30) for controlling timing to discharge ink droplets by the recording head units to reduce ink droplets placement errors in the first direction based on the first error provided by the recording head units, the second error provided by the recording head arrays, and the third error provided by the recording heads.

Lidke et al. does not disclose the recording head units which are disposed in a staggered arrangement.

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Ishikawa discloses recording head units which are disposed in a staggered arrangement (figs. 1 and 3).

It would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate the nozzle arrangement of Ishikawa into the invention of Lidke et al., for the purpose of obtaining images with high (increased) resolution (abstract).

Allowable Subject Matter

7. Claims 10, 11, 13, 14 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to overcome any objections outlined above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian D. Huffman whose telephone number is (571) 272-2147. The examiner can normally be reached on 9:30a.m.-6:00p.m. Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JH
28 June 2005



K. FEGGINS
PRIMARY EXAMINER